

WHAT IS CLAIMED IS

1. An over-current protection apparatus with high voltage endurance, comprising:

a first electrode layer being continuous and uniform;

5 a second electrode layer being continuous and uniform; and

a ceramic current-sensitive layer sandwiched between the first and second electrode layers and comprising a basic matrix, dopants, conductors and sintering materials;

the over-current protection apparatus having the following features:

10 (a) a normal resistance of less than 10 ohms;

(b) a resistance-jumping ratio of less than 1.3; and

(c) a thickness of less than 2.5 mm.

2. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the area of the over-current protection apparatus is less than 200mm².

3. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the Curie point of the over-current protection apparatus is less than 85°C.

4. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the basic matrix is composed of barium titanate.

5. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the dopants are selected from the group substantially consisting of strontium, lead, beryllium, calcium and selenium.

6. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the conductors are selected from the group substantially consisting of carbides of titanium, zirconium, niobium and tantalum.

5 7. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the conductors are selected from the group substantially consisting of silicides of titanium, zirconium, niobium and tantalum.

10 8. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the sintering material is selected from the group substantially consisting of silicon, titanium and germanium.

15 9. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the first and second electrode layers are selected from the group substantially consisting of nickel-phosphorus alloy, silver, aluminum, gold, gallium-iodine alloy and zinc-silver alloy.

20 10. The over-current protection apparatus with high voltage endurance in accordance with Claim 1, wherein the first and second electrode layers are made by electroplating, plasma sputtering, flame sputtering, supersonic soldering or thick film printing.